Volunteer Firemen

Professional Journal of the Volunteer Firemen's Section of the National Fire Protection Association

Volume 1, Number 14 **BOSTON, MASSACHUSETTS** **November, 1934**

Fire departments in northern states and in Canada and Alaska are getting ready for winter. Scenes like the one above of a mid-winter fire in Montreal are typical of what the fire fighters of colder climates have to face as a regular part of their work.

Getting Ready For Winter

Cold Weather Is Coming, But Fire Departments Are Preparing Apparatus and Equipment for It

MEMBERS of fire departments fortunately located in the southern parts of states such as Florida, Texas and California will find any discussion of the problem of fire fighting in cold weather of only academic interest. Readers so situated may just skip this page and the next. To the vast majority of fire departments and particularly those in the northern states, Canada and Alaska, the coming of cold weather brings a period in which the ingenuity of fire officers and men is taxed to the limit to keep ahead of the additional enemies they have in the form of snow, ice and freezing weather.

In addition to the problem of snow and ice as factors in making response to, and work at, fires more difficult, the major problem of cold weather is to keep the water in radiators, booster or chemical tanks, extinguishers and hose lines from freezing.

A heated place to keep the apparatus between runs is practically essential. An unheated station house or garage multiplies difficulties in freezing weather. If kept above 40 degrees Fahrenheit, the apparatus can make most of its runs, except very long ones, without serious freezing hazard to the water equipment. As an added safeguard covers or blankets for water or chemical tanks and to protect valves and piping of the pump

Water freezing almost as fast as it is thrown adds to the difficulties of fire fighting in severe weather. The picture above shows ladders and other apparatus solidly frozen in after a fire.

assembly are provided in many departments. If the apparatus must stand for some time at a fire unused, booster tanks may be drained.

Non-freezing solutions sometimes are used in booster tanks, but this is generally an unsatisfactory practice unless the tanks are made especially to resist the corrosion which may result to metal parts due to long exposure to such solutions. However, non-freezing solutions are extremely valuable for a variety of uses during cold weather. Such solutions can be satisfactorily kept in water pails, barrels and pump cans in warehouses and other unheated buildings. Some departments replace such of their extinguishers as would otherwise freeze with pump cans filled with non-freezing solutions during cold weather. This is an especially useful practice where runs are relatively infrequent or where long runs may be the rule.

The best material for making non-freezing solutions is commercial (75%) calcium chloride. An accompanying table shows how to prepare these solutions, with concentrations proportional to the coldness which may be encountered. The concentration can be measured with a hydrometer which should show the results given in the table for the mixtures employed. Common salt is sometimes used in non-freezing solutions but is generally unsatisfactory because of its severe corrosive effect and because such solutions crystallize and cake up the container.

Soda-acid and foam type extinguishers become sluggish in their action at temperatures lower than 40° F. and will freeze almost as quickly as water. Such extinguishers are not suitable for zero weather use. They must never under any circumstances be treated with any chemical in an attempt to prevent freezing. The addition of such chemicals causes difficulties in the operation of these extinguishers which may be weakened by corrosion or clogged by the addition of such solutions.

There are several types of extinguishers which are not made inoperative by cold. One of these is filled with a calcium chloride solution which is expelled by the generation of gas from a special fuse or from a cartridge of carbon dioxide. Another type whose solution is non-freezing is that known as the "loaded stream", the extinguishing effect of which is appreciably greater than plain water. In the carbon dioxide gas type and those using carbon tetrachloride liquid, the extinguishing agents will not freeze. These are therefore suitable for cold weather use.

Hose is subject to injury if not given proper care in cold weather. Most departments do everything possible to prevent water from freezing solid in hose lines. Nozzles are never completely shut down until men are ready to break and drain the lines. Frozen hose is picked up carefully, bent as little as possible and carefully thawed out at company quarters.

Care of Motor Apparatus

Motor fire apparatus during cold weather has to be given the same attention that is given to any good automobile. A check list of steps usually taken by the fire department before the cold weather arrives would include the following precautions:

1. Overhaul and test all equipment.
2. Change oils in crankcase, differential and transmission to lighter grades.
3. See that batteries are fully charged.
4. If possible provide radiator shutters. Where shutters cannot be provided it is possible to fall back

To Make Non-Freezing Water Solutions

The following mixtures will make 2½ gallons of a solution which will not freeze at the temperatures given. Commercial 75% calcium chloride (free from magnesium chloride) should be used.

Approximate Freezing Temperature Degrees F.	Water	Calcium Chloride	Specific Gravity
10°	2 gals. 1 qt.	5 lbs.	1.139
zero	2 gals. 1 qt.	6¼ lbs.	1.175
10° below	2 gallons	7 lbs. 6 oz.	1.205
20° below	2 gallons	8 lbs. 6 oz.	1.228
30° below	2 gallons	9 lbs. 2 oz.	1.246
40° below	2 gallons	10 lbs.	1.263

on the well-known stunt of placing a piece of cardboard on the lower part of the radiator.

5. Fill radiator with a non-freezing solution. Calcium chloride, of course, cannot be used in such solutions because of its corrosive effect. Alcohol solutions are widely used and there are several satisfactory proprietary solutions on the market for this purpose. Some departments do not use non-freezing solutions because they would be lost during a stretch of pumping at a fire. However, the importance of having the pumper in operating condition makes the use of alcohol or other suitable solution a practice to be recommended in most cases. Fire conditions in most communities do not call for the use of the pumper sufficiently often to make the practice expensive, and the advantage of not having to drain radiators in cold places is considerable.

Freezing Hydrants

The freezing of hydrants is a problem which has been met in a number of satisfactory ways. Special thawing devices are carried by some departments, but the best practice is to take steps which will prevent the hydrants from freezing in the first place.

While in many communities the water department or water utility has the responsibility for the care and maintenance of hydrants, they are of such importance to the fire department that the department may reasonably be expected to insist that the water authorities take the necessary steps to keep hydrants operative during cold weather.

The fire department in many places sees that all hydrants are set properly in the first place. Under the base of every hydrant should be dumped about a half barrel of small stones so that water may have a chance to drain away from the hydrant.

A number of departments have a regular routine of assigning a number of the members of the company to the duty of looking after certain hydrants on the town or village system. The men so assigned inspect the hydrants before cold weather to see that they drain properly and operate readily. These men also see to it that the hydrants are properly cleared of snow after a heavy snowfall so that they may be kept accessible.

The cold weather season gives the fire department an excellent opportunity to check over the fire protection of industrial plants, stores and institutions to make sure that all necessary precautions have been taken with private fire equipment during the cold months.

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Discussion Topics for Company Meetings

Suitable topics or problems to be used as a basis for discussion at monthly meetings of volunteer fire companies or departments are in great demand. For example, during the current month the Board of Fire Marshals of the Delaware County Firemen's Association of the State of Pennsylvania has chosen the two topics given herewith for the use of the 63 volunteer fire companies comprising the membership of that organization.

Problem Questions
FOR NOVEMBER

Suggested for discussion at company and department meetings this month

I

What is the proper size of nozzle to use in fighting residence fires that are not greatly advanced?

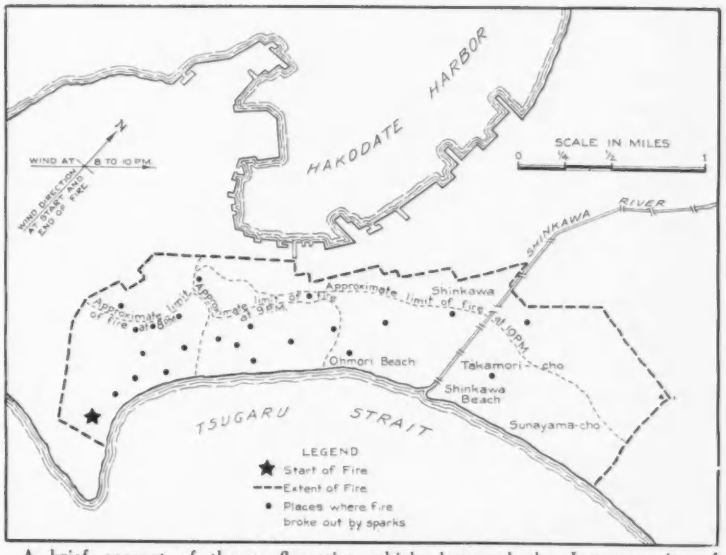
II

Will a 750 or 1000-gallon pumper work efficiently when connected to a hydrant with a 4-inch main?

Watch for the answers in the next issue of VOLUNTEER FIREMEN

At the same time William E. Wunderlich, Financial Secretary of the Delaware County Association sent the questions to us asking that we prepare the correct answers.

The questions are presented for the use of other companies which may like to use them at meetings this month. Next month a set of answers will be published. If it appears that this plan is of sufficient general interest we will propose other questions in future issues. We would be glad to receive suggestions from readers on this idea.



A brief account of the conflagration which destroyed the Japanese city of Hakodate in March was given in the June issue of VOLUNTEER FIREMEN. Through the courtesy of Japanese members the information from which the above map was prepared has just been obtained. It shows how the fire spread destroying over half the city, including 11,102 buildings with estimated loss of $62,000,000 and over 2,000 lives.

Los Angeles County's Fire Department

County Control Welds 31 Suburban and Rural Districts Into Strong Fire Service Organization

This article has been made possible through the courtesy of Spence D. Turner, Los Angeles County Forester and Fire Warden (Member N.F.P.A.), and John H. Colton, Engineer, Board of Fire Underwriters of the Pacific (Member N.F.P.A.).

In setting out to organize a volunteer fire department it is always necessary to decide how the department will be controlled and financed. It may be made an independent organization controlled by a board of trustees or a committee. Or it may be controlled by city, town or county authorities. If independent, the company will depend for its support on contributions from the citizens of the community. Others will be financed by taxes.

After organization has taken place a host of questions come up to be settled. How many full time men and how many call men or volunteers shall compose the department? Shall the call men be paid and how much? What apparatus shall be provided? How can the best apparatus be obtained at lowest cost? What arrangements can be made for calling and giving outside aid from or to surrounding communities? How can the members of the department be trained and drilled? How can fires be investigated? What can be done to prevent fires through inspection work? What can be done to maintain apparatus in good condition?

All of these questions have to be answered one way or another. If an attempt were made to show how these questions have been decided there would probably be as many answers as there are volunteer fire departments in the country.

In the State of California by law suburban and rural fire departments may be extensively organized on a county basis. This makes possible a high degree of organization so that no matter how many small companies there may be scattered throughout a county they may be under centralized direction. Consequently there may be available for the protection of the whole county a strong, well organized and quickly mobilized fire force.

The California state laws which make this possible are worth recording. Of course, any town or village or other community may, if it wishes, organize an independent, wholly volunteer fire department, raise its own funds by subscription and run a wholly self-contained and self-supporting organization.

Where there is no fire department as in some suburban communities, the law authorizes the county board of supervisors to enter into contracts with nearby cities and towns to provide fire service. This makes it possible for the county authorities to buy fire protection service for any area when this is more practical than attempting to form a local fire district.

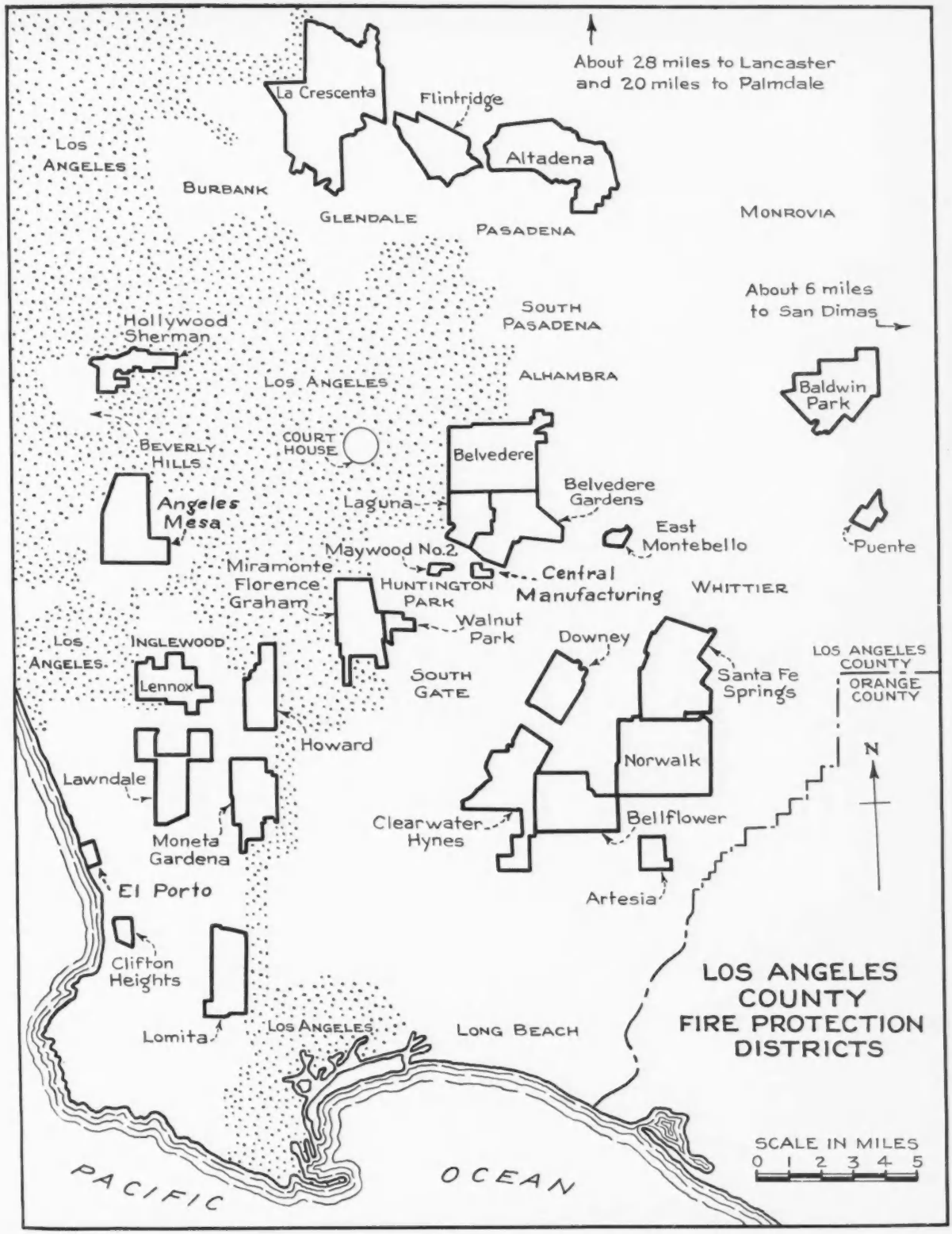
The California law also provides for the organization of incorporated fire districts. Such a district may be self-governing under the direction of an elected board of three fire commissioners. The board fixes the limit of the fire district, makes regulations and adopts ordinances for fire prevention and fire protection, purchases equipment and contracts for water supply. Members of the board receive no pay. Proposed expenditures are approved by the voters and submitted to the county board of supervisors. Taxes are then levied to cover the annual expenditures.

It is also possible for the county board of supervisors to initiate the organization of a fire district. After the voters affected approve the organization, the county board controls the district directly through a fire warden or they may delegate the control to a board of commissioners. Also on petition of 25 per cent or more property holders, the county board of supervisors may be required to set up a district usually delegating control to a board of three or five directors.

Under whichever plan the fire districts are organized the law is such that the county board of supervisors has sufficient direction and control to assure the districts' co-operation with others in the county. There is also adequate provision in the law to authorize the use of equipment and personnel from one district to answer alarms in other districts and to provide for the reimbursement of districts furnishing such service.

In Los Angeles County the board of supervisors appoints a fire warden who is chief of the county fire department and in charge of the 31 organized fire protection districts. The total population of these districts is approximately 300,000. The character of the districts is such that they include surburban areas and large tracts of rural territory. The smallest individual district is about ½ square mile in area and the largest one is 13½ square miles, or an average of 4 square miles per district. The location and size of these districts with respect to Los Angeles and other cities of the county are shown on the accompanying map.

Each district has one or more fire companies the same as they would have if they were not organized on a county basis. The officer in charge of the local company is called a captain or fire foreman. He acts as chief at any fire except where one of the battalion chiefs from the county fire warden's office may be present. Most of the companies are composed of paid men and a number of call men. Paid men are required to be in uniform and are drilled twice weekly. Crews range from 2 to 6 men on a shift. The call members of the department are drilled once a week.


About 28 miles to Lancaster
and 20 miles to Palmdale
La Crescenta
Flintridge
Altadena
Los Angeles
Burbank
Glendale
Pasadena
Monrovia
About 6 miles
to San Dimas
South Pasadena
Hollywood
Sherman
Los Angeles
Alhambra
Baldwin Park
Beverly Hills
Court House
Belvedere
Belvedere Gardens
Laguna
Angeles Mesa
East Montebello
Puente
Maywood No.2
Central Manufacturing
Miramonte
Florence
Graham
Huntington Park
Whittier
Walnut Park
Downey
Los Angeles
Inglewood
Lennox
South Gate
Santa Fe Springs
Los Angeles County
Orange County
Howard
Norwalk
Lawndale
Clearwater
Hynes
Bellflower
Moneta
Gardena
El Porto
Artesia
Clifton Heights
Lomita
Los Angeles
Long Beach
LOS ANGELES COUNTY FIRE PROTECTION DISTRICTS
N
SCALE IN MILES
0 1 2 3 4 5
PACIFIC OCEAN

Most districts have one pumper each. All are equipped with water tank and booster pump and general use of small streams is made. The average amount of 2½-inch hose carried is 1350 feet. About 70 per cent of the companies are provided with 200 feet or more of 1½-inch hose with standard appliances.

Under the county fire warden who is chief of the fire department, is a deputy chief, an assistant chief and two battalion chiefs. These chiefs respond to fires whenever possible. The county is divided into eastern and western battalions, each in charge of one of the battalion chiefs. The chief officers organize and supervise the drill work of the various companies.

The county is divided into 5 field divisions and has a personnel of 26 assistant fire wardens, 30 forest firemen, 5 dispatchers, 10 apparatus engineers, 7 truck drivers, and during the forest fire season 15 patrolmen. This personnel works out of 18 headquarters and patrol stations. Eight lookout towers are maintained. Eight 600-gallon pumpers and three 250-gallon pumpers are assigned to prevention and control of forest fires and building fires outside the county fire protection districts.

In the office of the county fire warden are such functional divisions as the following:

1. A construction division which builds and maintains firebreaks, motorways, telephone lines, trails, and all structural units of the department.
2. A fire prevention bureau which inspects all the premises in each district four times each year, makes investigations of incendiary fires and enforces fire prevention measures and does educational work.
3. An intelligence division to assemble and summarize records of alarms, fires, equipment, operations and other statistics, and prepare maps and other records necessary for the direction of the department.
4. A division of service and supplies to order and distribute equipment.
5. There is a chief clerk to supervise all finance and to keep the accounts of the district.

Two spare pumpers of 350 and 750 gallons per minute capacity respectively are maintained to replace any company's apparatus which may be laid up for repairs. Four mechanics from a central repair shop are available to service apparatus, one being on duty at all times.

The Los Angeles County set-up provides the strong centralized control which furnishes the communities served with an effective system of mutual aid as the facilities of several districts may be concentrated at one place in case of a serious fire. For example, a severe storm in the Altadena district damaged a number of electrical circuits and caused 22 fires. The alarm was reported to the central office and immediately 65 trained firemen from 13 surrounding districts under command of officials from headquarters responded.

In addition to stronger protection, the set-up gives all of the fire districts additional services which none of them, individually, could afford. Operating as a unit they have excellent facilities for drills and training, means of doing fire prevention inspection work, a trained staff to investigate fires, centralized purchasing with its resultant economies in buying apparatus and supplies, adequate repair facilities and a reserve of apparatus. These are advantages which ordinarily are enjoyed only by the larger communities.

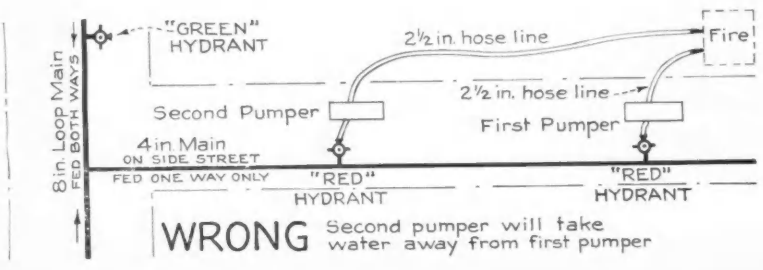
Standard Markings For Hydrants

Recommended Plan Provides a "Stop-Go" System of Painting to Indicate Capacities Available

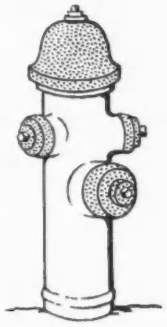
A hydrant may be just a hydrant so far as a layman is concerned, but fire fighters want to know how much water they can get from any particular one. Since hydrants must be painted anyway, the idea has frequently been advanced that a uniform system of painting be employed which will tell for fire fighting purposes whether the hydrant is good, bad or indifferent.

Of course, members of a fire company are expected to know the details of the supply available at all hydrants to which they usually respond, but where companies are so often called to districts with which they may not be familiar or in other towns on mutual aid, these uniform markings can be of great assistance in making quick and effective placement of apparatus.

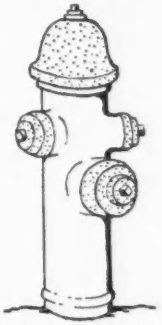
J. W. Randlette, chief of the volunteer fire department of Richmond, Maine, has pioneered the development of a uniform system of markings which is simple and practical. The plan is one which has already recommended itself to a number of



Top and Caps GREEN



Top and Caps ORANGE



Top and Caps RED

Barrel of Hydrants Chrome Yellow

Class A
1000 G.P.M. or over
Better than 4 hose streams

Class B
500 to 1000 G.P.M.
2 to 4 hose streams

Class C
Less than 500 G.P.M.
Less than 2 hose streams

communities and has the support of several regional groups of water works and fire department officials. It is now being presented for the consideration of such national organizations as the National Fire Protection Association, the International Association of Fire Chiefs and the American Water Works Association. The recommended practice, described in the accompanying illustration, is therefore still in tentative form, but it represents a method which is the result of much thought and study and which is generally recognized as a desirable standard.

The maximum draft which a hydrant can furnish depends upon factors such as size of hydrant, size and condition of main to which it is connected, size and arrangement of gridirons, water supply to the mains, pressure and elevation. It is obviously impossible to indicate on hydrants all of these factors but there is need of a readily recognized marking so that when a fire company pulls up to a hydrant it can know whether the supply from the hydrant is likely to be satisfactory or otherwise.

In applying the markings capacities of hydrants are to be determined by flow tests on one hydrant at a time. Tests are to be made under fire conditions with the water works pumps operating and at a time of maximum domestic demand. The hydrant is rated on the water it will deliver without letting the pressure in the mains drop below 20 pounds. Markings are then to be made by painting the hydrants according to the classification given below.

The recommendations provide that hydrants should be divided into three classes as determined by the flow capacity tests. The barrels of all post hydrants are to be painted CHROME YELLOW for visibility. Tops and nozzle caps are to be painted according to the class of hydrant as follows:

CLASS A: Hydrants which have a sufficient flow capacity to supply 1,000 gallons per minute or more. The tops and nozzle caps to be GREEN.

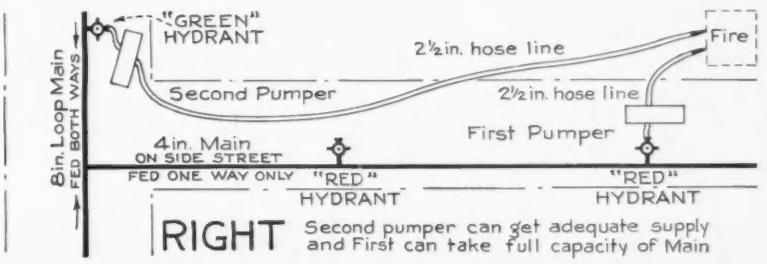
CLASS B: Hydrants which have sufficient flow capacity to supply between 500 and 1,000 gallons per minute. The tops and nozzle caps to be ORANGE.

CLASS C: Hydrants which have a flow capacity of less than 500 gallons per minute. The tops and nozzle caps to be painted RED.

These colors may be compared to the standard traffic signals with which everyone is familiar. Note that green in both cases is the most desirable and red the least desirable.

The examples of a WRONG and RIGHT hookup shown in accompanying sketches illustrate a practical application of the recommended system of marking to fire fighting practice. In the case illustrated, the fire officer on noting the red caps of the hydrants is warned of a limited supply from the hydrants on that particular main. He will realize at once that there is no use in putting two pumpers to work on hydrants which can at best furnish only a doubtful supply to one pumper.

Without delay he will therefore go back along the water mains until he finds an "orange" or "green" hydrant, or will take suction from a pond or stream.



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Mailing of VOLUNTEER FIREMEN The executive office of the N.F.P.A. is going to considerable trouble to make the mailing arrangements on VOLUNTEER FIREMEN such as to assure members of the Volunteer Firemen's Section receiving the magazine regularly. A careful routine is established to check cases of non-delivery by the post office. In these cases the office gets in touch with company officers for corrections of addresses.

So far there have been only one or two cases where members have reported difficulty in getting the issues mailed to them. We wish to make certain that all members are getting their copies of VOLUNTEER FIREMEN, and that the company is receiving at headquarters the other N.F.P.A. publications to which the company is entitled by its membership. We therefore will consider it a favor if we are notified of changes in addresses. If by the tenth of any month your issues have not arrived, please let us know.

We do not wish you to miss any issues of the magazine, and if at any time an issue goes astray and you let us know about it we will gladly send another.

Prompt Renewals Are Necessary If we are to make sure your company does not miss any issues after the expiration of the membership year, we must receive renewal applications promptly. Each company will be notified a month before its membership expires and will be sent a renewal blank. It is important that the names and addresses on this blank be carefully checked and that it be sent in as soon as possible.

Of the companies whose membership expires this month more than eighty per cent have already renewed, and before the time comes when the names must be dropped if they are not heard from, we believe nearly all will respond. In some cases the expiration notice may be received at such a time that it cannot be acted on at a meeting of the company before the expiration date. Where this may happen we request company officers to advise us that the company is planning to renew its membership and we will see to it that the members of the company do not miss any of the issues.

Otherwise we will be obliged to drop a company promptly at the end of its membership year. The large amount of valuable material we are sending at the very low cost per man makes this practice necessary in fairness to other members.

California's County Fire Departments In this issue is presented a story of the set up for the organization of rural and suburban fire departments in California. We think it will interest the many county organizations of firemen in other parts of the country which have been working for many years to bring about an ideal cooperative plan for the county. By one stroke, the California set-up makes possible the ultimate development of mutual aid, and brings to each small community a strong reserve of fire apparatus, an advantage which ordinarily only the largest cities can have. Then too, they have been able to provide machinery for fire investigation and inspection work of a high order, and through centralized purchasing and maintenance departments are in a position to operate economically and efficiently.

A Racket Reported The secretary of a volunteer fire company in Ohio asks us to warn other volunteer fire companies about a man who is visiting the smaller cities and getting a fireman to go around with him among the business men to help him collect money for advertising space on a large card. He reports that for compensation this fireman receives $3 and a worthless fire extinguisher, and the man leaves town with the business men "holding the sack".

New Members During October Since the last issue, the following thirteen fire companies and departments with 271 men have enrolled in the Volunteer Firemen's Section of the National Fire Protection Association. Renewal applications have also been received from 20 companies or departments with 409 men. The total membership of the section is now 6,785 members.

Ketchikan Volunteer Fire Department, Ketchikan, Alaska.

Abbotsford Village Fire Department, Abbotsford, British Columbia.

Harrison Fire Department, Harrison, Arkansas.

Mountain View Fire Department, Mountain View, California.

Five Points Fire Company, Richardson Park, Delaware.

Keewatin Fire Department, Keewatin, Minnesota.

Allendale Fire Department, Allendale, New Jersey.

Delaware Gardens Fire Company, Delaware Gardens, Merchantville, New Jersey.

North Brunswick Volunteer Fire Department, New Brunswick, New Jersey.

Stanhope Hose Company No. 1, Stanhope, New Jersey.

LeRoy Volunteer Fire Department, LeRoy, Ohio.

Apache Volunteer Fire Department, Apache, Oklahoma.

Bishop Volunteer Fire Department, Bishop, Texas.

MEMBERSHIP PLAN

Volunteer Firemen's Section National Fire Protection Association

WHERE twenty or more firemen in a volunteer company or department affiliate with the Volunteer Firemen's Section the cost is 50 cents a year *per man*. Each fireman will receive one copy of VOLUNTEER FIREMEN, the monthly journal of the Volunteer Firemen's Section, mailed regularly to his home address. The company or department automatically becomes a member of the National Fire Protection Association and is entitled to full privileges of membership. All the literature regularly issued to N.F.P.A. members is mailed to headquarters of the company or department.

Membership may be applied for by one member of the company or department collecting 50 cents for each of the 20 or more members and making a single remittance for the group, or the company or department may take a membership for its men and make a single remittance from the company or department treasury.

Companies With Less Than Twenty Members

Because of the large amount of material mailed to members, not less than $10.00 can be accepted from any company or department for membership dues. In the case of companies or departments with less than twenty men this means that the cost divided among them will be slightly higher per man. Of course, some such companies or departments may prefer to make a single remittance of $10.00 from the company or department treasury. In other cases a few interested citizens, not members of the company or department, may be glad to contribute 50 cents apiece to make up the required minimum of twenty, so that the members may secure the rate of 50 cents per man.

These companies or departments have full privileges of N.F.P.A. membership as above, and each member receives the monthly magazine, VOLUNTEER FIREMEN, at his home.

Pyrene Prize Letter Contest

More Awards for Best Letters on Actual Fires Put Out With Fire Extinguishers

THIS MONTH'S WINNERS

FIRST PRIZE — $10.00

CHARLES MEEKS, *Lieutenant*,
Miami Township Fire Department,
Addyston, Ohio

Tractor and Farm Buildings Saved

"Upon answering an alarm from a farm we found a tractor on fire. It was sitting just outside a large barn filled with hay and farm implements, and a two-story frame dwelling was not fifty feet away. The fire was caused and fed by gasoline leaking on the red hot manifold. The gasoline was running on the ground toward the barn.

"With a 2½-gallon foam extinguisher I quickly extinguished the fire. The loss was about $50, and had it spread to the buildings it would have been nearer $10,000. Because of such experiences I give much credit to fire extinguishers."

SECOND PRIZE — $3.00

NORMAN G. LANGE,
Fire Department, Anchorage, Alaska

It's a Dangerous Thing to Do

"Last winter I tried to thaw out a frozen water line in my house with hot water, but finding it a hard job I used a blow torch. The torch was cold and shot a spray of gasoline through the flame and against the wall starting a fire. I soon put to good use the carbon tetrachloride extinguisher which I keep handy in the kitchen.

"We had two fire calls during the winter where water lines froze up and people tried using blow torches starting fires on the walls. I've concluded it's a dangerous thing to do."

THIRD PRIZE — $2.00

C. M. STAUFFER, *Chief*,
Fire Department, Monticello, Wis.

Puts Out Electrical Fire

"Some time ago we were called out at midnight to extinguish a blaze in a grist mill. Two electrical connections carrying 2300 volts had not been properly taped and a mouse touching both wires caused a 'short' and started the blaze.

"Some men were about to turn water on the fire when our volunteer fire department arrived and put it out with a 1½-quart carbon tetrachloride extinguisher. Several human lives were probably saved by not permitting water to be used but using instead this chemical which is a non-conductor of electricity."

HONORABLE MENTION

JOHN T. LAMPLUGH, *Deputy Chief*,
Fire Department, Linwood, Pa.

JAMES S. FRAME, *Chief*,
Volunteer Fire Department,
West Union, Ohio

H. T. DANNER,
Washington Fire Engine Co.,
Beaufort, S. C.

You Can Write a Winning Letter

Why not write down the story of some experience you have had with putting out a fire or saving a life with an approved fire extinguisher and make yourself eligible for a cash prize? Just tell about one of these experiences in your own words in a short letter and send it to us.

Co-operatively with the Pyrene Manufacturing Company of Newark, N.J., VOLUNTEER FIREMEN is awarding the following cash prizes each month: First Prize, $10.00; Second Prize, $3.00; Third Prize, $2.00. The contest is judged each month by the engineering staff of the National Fire Protection Association and the editors of VOLUNTEER FIREMEN.

CONTEST RULES

1. Only members of a volunteer fire department may compete in the Pyrene Prize Letter Contest.
2. Letters are to describe actual experiences where any approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experiences.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 15th of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letter to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

THROW AWAY YOUR SODA-ACID CHARGES

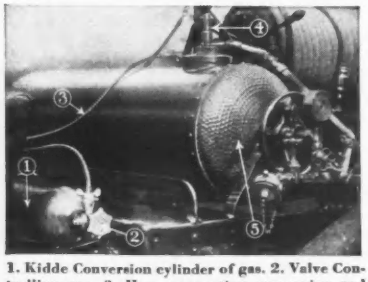
Now You Can Have All the Advantages of a Booster Pump at a Fraction of the Cost

Fire departments, equipped with 40-gallon chemical tanks, now can eliminate the mess and trouble of recharging with chemicals. The new Kidde 40-gallon tank conversion supplies the pressure for discharging chemical tanks and makes recharging an easy matter.

The Kidde conversion consists of a cylinder of compressed carbon dioxide gas which is connected to the 40-gallon tank by means of small bore hose. To operate it, you open the valve on the conversion cylinder and discharge gas into the 40-gallon tank until the pressure gauge shows the pressure you want. Then, when you open the water valve, you will get a hose stream with better range than you ever had before.

To recharge, you simply fill the 40-gallon tank with water. One charge of gas in the conversion will empty a 40-gallon tank 4 to 6 times. A recharge for the conversion cylinder costs no more than one soda and acid charge. Conversions are available for both single or double tanks and can be easily installed by any mechanic.

Send for the FREE folder, "Modern Equipment for Modern Fire Departments."



1. Kidde Conversion cylinder of gas. 2. Valve Controlling gas. 3. Hose connecting conversion and tank. 4. Safety valve. 5. Forty gallon tank.

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TECHNICAL CORRESPONDENCE

Answered by Robert S. Moulton, *Technical Secretary*

Protection for a Country Home And Data on 1½ inch Hose Lines

National Fire Protection Association,
Boston, Mass.

Gentlemen:

I have received an inquiry from one of our contractors who is erecting a large home near here. The place is about 25 miles from any fire company. They are putting in a large reservoir which will have 50,000 gallons capacity but will have to install a pump to furnish pressure. They are anxious to use 1½-inch hose and want to know the size pump to use to furnish the proper nozzle pressure. Do you have any information for 1½-inch hose? If so will you please send me whatever you may have. We have formulas for 2½-inch hose but none for 1½-inch. We will, of course, be glad to pay for any book on this subject which you may be able to furnish.

Thanking you for your attention to this, I am

Yours truly,
W. G. BARTENSTEIN, *Chief*,
Volunteer Fire Department
Warrenton, Va.

Answer. In reference to your letter, VOLUNTEER FIREMEN for October, 1933, contained a comprehensive article on water systems for fire protection with particular reference to rural and farm districts. This article referred primarily to the problem of water supply for the individual rural dwelling or group of farm buildings and recommended a pump of at least 50 gallons per minute against 60 pounds pressure, permitting the delivery of a satisfactory stream through a ½-inch nozzle. The same article suggested a 4,000 gallon storage tank for this use.

The installation which you describe with its 50,000 gallon reservoir is evidently a much larger proposition than contemplated in the committee report published in VOLUNTEER FIREMEN. With a large building or group of buildings, and a water storage capacity probably larger than necessary for fire fighting it would presumably be desirable to provide considerably greater pumping capacity. In this connection consideration should be given to the size of the mains and their layout. If the property is large and a valuable one it might be reasonable to recommend a water system similar to that which would be installed in a small town. In order to make intelligent recommendations on such a layout it would be necessary to have very complete information on the entire property and it is preferable to make recommendations only on the basis of personal inspection or conference with the property owner. If insurance considerations are involved it would doubtless be desirable for the property owner to confer with the Virginia Insurance Rating Bureau, American National Bank Bldg., Richmond, Va.

Fifty to seventy-five gallons per minute pumping capacity should be provided for each 1½-inch hose line, the number of lines to be provided for depending, of course, upon local conditions. The pressure to be pro-

CHARACTERISTICS OF 1½ INCH HOSE LINES

Nozzle pressures are given only in the practical fire-fighting range.

DISCHARGE	NOZZLE PRESSURE Pounds per Sq. In.			FRICTION LOSS
U. S. Gallons per Minute	*Diameter of Tip*			Pounds per 100 ft. of Hose
	½ in.	⅝ in.	¾ in.	
35	22.5	. . .	. . .	4.8
40	29.4	. . .	. . .	6.1
45	37.2	. . .	. . .	7.6
50	45.8	18.3	. . .	9.3
70	. . .	36.0	17.5	17.0
100	. . .	. . .	35.6	33.0
120	. . .	. . .	51.0	47.0

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vided would also depend upon local conditions. This should be at least 60 pounds per square inch and more if long hose lines are to be used or if there is a grade which necessitates pumping uphill.

Answering your question about 1½-inch hose I am appending a table which gives friction losses. I trust that this will give you the desired information.

If we can be of further service to you in this matter, please call on us.

□ □ □ □ □

90% of Farm Fires Confined To Buildings of Origin

In 1932 and 1933 city and village fire departments in Wisconsin responded to 1,540 farm fire calls. In 603 of these fires enough of the building on fire at the time of arrival of the department was saved so that it could be repaired. In 802 cases the building in which the fire originated was destroyed, but the fire was kept from spreading to other buildings. In the remaining 135 cases the fire spread to other buildings before the fire department arrived. In short, over 90% of the fires were confined to the building in which they originated, and in nearly 40% there was substantial salvage on the buildings of origin.

These data were compiled by Judge J. E. Florin, Superintendent of Fire Prevention, Industrial Commission of Wisconsin. The figures clearly show the value of the fire protection which can be given to farm and rural districts by fire departments of cities and villages. Individual farms and communities that do not have adequate fire protection equipment or are not protected by a volunteer fire department should make arrangements beforehand with some organized department for fire service. Judge Florin states that in Wisconsin there are many unincorporated villages, hamlets and thickly settled communities where it would pay to organize and equip fire departments.

One volunteer fire chief has prepared a large map, drawn to scale, showing approximately 500 sets of farm buildings which his department protects on call. All highways and the type of their construction and condition are indicated. Each farm is numbered and a card index shows the available water supply and other pertinent facts concerning each farm. The particular card is studied by the chief on the way to the fire and a plan of procedure is mapped out.

"The farmer," Judge Florin concludes, "must practice fire prevention, should have some first-aid fire fighting equipment, should inspect his own buildings for potential hazards, and should make arrangements for protection by regular departments. Automobile apparatus, good roads and telephones are great aids to farmers."

Announcing . . . .

The Volunteer Fire Company

By William Draper Brinckloe

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Fire Prevention

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XIV.
Books and Bulletins

The author of this new book describes himself as "an old volunteer fireman from a very old company." He sets forth his dearly bought experience to help his brother firemen. Mr. Brinckloe was the leading spirit in the organization of the Volunteer Firemen's Section. His untimely death prevents his participation in the Section's development, but his forceful character, good judgment and experience lives vividly in the pages of this book. Written for the use of volunteer fire companies, private fire departments, farmers' organizations, civic organizations, women's clubs, firemen's schools, insurance men and citizens generally, it is not in any sense a textbook, but an intensely interesting story of volunteer fire departments and volunteer firemen. A dozen leading fire protection engineers who reviewed the manuscript for technical accuracy all reported they found the text as interesting reading as a good novel and could not put it down until they had read every page.

Mr. Brinckloe as President of the Easton, Maryland, Fire Department, the Maryland State Firemen's Association and other fire fighting organizations, a member of the American Institute of Architects, the American Society of Agricultural Engineers, the American Legion and other organizations and a writer of national reputation, presents this story which is at once fascinating reading and technically accurate. The book is sponsored by the Committee on Farm Fire Protection of the National Fire Protection Association which has reviewed it and finds all its recommendations consistent with the official standards of the Association.

The book is an attractive cloth bound volume of 168 pages with 24 illustrations of volunteer fire department apparatus, equipment and fire fighting methods. The book is published by the National Fire Protection Association at the nominal charge of $1 per copy postpaid.

ORDER FORM

National Fire Protection Association **Date** .....

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